

## Two new species of *Heteromysis (Olivemysis)* (Mysida, Mysidae, Heteromysinae) from the tropical northwest Atlantic with diagnostics on the subgenus *Olivemysis* Băcescu, 1968

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### Abstract

A survey of mysid crustaceans in near-shore habitats of the Cayman Islands and the Turks and Caicos Islands, BWI yielded two new species of mysids belonging to the genus *Heteromysis* S. I. Smith, 1873. *H. (Olivemysis) modlini* n. sp. occurred on live bottom habitats in shallow waters of Grand Cayman Island, and *H. (Olivemysis) mclellandi* n. sp. from sponges in depths of 21–27 m on deep fringing reefs off Pine Cay, Turks and Caicos Islands. *H. modlini* may be distinguished from closely related species in the western Atlantic by the following characters: (1) 6–7 robust flagellated setae on the medial margin of the carpo-propodus of thoracic endopod 3, (2) 3–5 and 4–6 bent, attenuated spines on male pleopods 3 and 4, respectively, (3) 3–4 spiniform setae along the medial margin of the uropodal endopod, and (4) 10–16 spinules along the anterior  $\frac{3}{4}$  of the telsonic cleft, 14–19 spiniform setae completely lining the lateral margins of the telson, and each apical lobe of the telson with a pair of spiniform setae, the outer 1.6–2.0 times longer than the inner. *Heteromysis (Olivemysis) mclellandi* is unique among known heteromysids in having modified attenuated setae on pleopods 1–5 of both males and females, and may be distinguished further from its related Caribbean congeners by the following characters: (1) tuberculate flagellated seta on the antennular peduncle, (2) 8–9 flagellated setae on the carpo-propodus of thoracic endopod 3, and (3) telson cleft depth: telson length ratio of about 1/6, and outer: inner length ratio of apical telson setae of 1.2–1.6. Diagnostic tables separating the two new species from related Caribbean congeners are presented. The subgenus *Olivemysis* Băcescu, 1968 is diagnosed and discussed; based on a critical review of the literature, 10 species, besides *H. (Olivemysis) modlini* n. sp. and *H. (Olivemysis) mclellandi* n. sp., are placed in this subgenus, bringing its total species number to 30.

**Key words:** Crustacea, heteromysids, Caribbean, taxonomy

### Introduction

Surveys of the shallow-water marine crustacean fauna of the Turks and Caicos Islands and the Cayman Islands were conducted from 1988 to 1990 and 1995 to 1999, respectively. Collecting methods for the surveys included the use of fine mesh kicknets, yabby pumps, epibenthic sleds, plankton nets, and light traps. Algal-coral-sponge-rock-sediment washings were eleutriated gently in a 10% formalin-seawater solution and sieved before preservation. SCUBA was used to collect subtidal organisms. To date, 11 publications have resulted from the Turks and Caicos study: three dealing with isopod taxonomy (Kensley & Heard 1991; Schotte & Heard 1991; Schotte *et al.* 1991), six with the taxonomy, distribution, and ecology of commensal palaemonid shrimps (Heard & Spotte 1991; Spotte *et al.* 1991; Heard *et al.* 1993; Spotte, *et al.* 1994; Spotte & Bubucis 1996; Heard & Spotte 1997) and two with the taxonomy of mysids (Price & Heard 2000, 2004).

Contributions related to collections from the Cayman Islands include taxonomic or ecological studies of copepods (Suárez-Morales *et al.* 1999), cumaceans (Petrescu 2003), mysids (Price *et al.* 2002, Price & Heard 2008), tanaidaceans (Gutu & Heard 2002), and pinnotherid crabs (Thoma *et al.* 2009).

This paper presents the descriptions of two new species of *Heteromysis* S. I. Smith, 1873, one from the Cayman Islands and another from the Turks and Caicos Islands. The Caymanian species, *Heteromysis* sp. A *sensu* Price *et al.* (2002), is formally described and named based on specimens from live bottom collections in shallow back reef and sand/seagrass habitats along the south coast of Grand Cayman Island. The second species, *Heteromysis* sp. A *sensu* Price and Heard (2004), was reported previously associated with sponges on fringing reefs off Pine Cay, Turks and Caicos. This latter species is unique among the known subfamily *Heteromysinae* Norman, 1892 in having modified setae present on all pleopods of males and females.

Type material is deposited in the National Museum of Natural History (USNM), Smithsonian Institution, and the Gulf Coast Research Laboratory (GCRL).

## Systematics

### Order Mysida Boas, 1883

### Family Mysidae Haworth, 1825

### Subfamily Heteromysinae Norman, 1892

### Genus *Heteromysis* S. I. Smith, 1873

### Subgenus *Olivemysis* Băcescu, 1968

#### *Heteromysis (Olivemysis) modlini*, new species

(Figs. 1, 2)

*Heteromysis (Olivemysis)* sp. A.—Price *et al.*, 2002: 48, fig. 4N.

**Type material.** Holotype: —adult male (Length [L] 4.6 mm), USNM 1142938, Grand Cayman Island, BWI, Cottage Point, rock/algal washings, depth 1–2 m, W. Price, R. Heard, coll., 23 May 1998. Paratypes: —1 adult male (L 4.4 mm), 2 ovigerous females (L 4.4, 4.3 mm), USNM 1142939, same collection data as holotype; —1 ovigerous female (L 4.4 mm), GCRL 2997, Grand Cayman Island, Cottage Point, rock/algal washings, depth 1–2 m, R. Heard, J. Foster, M. Abney, coll., 13 Aug 1999; —1 mature male (L 4.3 mm), —1 non-ovigerous female (L 4.0), GCRL 2998, Grand Cayman Island, South Sound (Prospect Point), rock/algal washings, depth 1.5 m, W. Price, R. Heard, coll., 19 May 1998; —1 ovigerous female (L 4.3 mm), GCRL 2999, Grand Cayman Island, The Edge, depth 1–2 m, W. Price, R. Heard, coll., 11 May 1998.

**Additional material examined.** —1 male, same collection data as holotype; —1 male, Grand Cayman Island, BWI, Cottage Point, rock/algal washings, depth 1–2 m, R. Heard, J. Foster, M. Abney, coll., 13 Aug 1999; —1 male, 3 females, Grand Cayman Island, South Sound (Prospect Point), rock/algal washings, depth 1.5 m, W. Price, R. Heard, coll., 19 May 1998; —2 males, 1 female, Grand Cayman Island, South Sound, west end, sand/seagrass, rock/sponge/algal washings, depth 1–2 m, W. Price, R. Heard, coll., 22 May 1998. Material in collection of W. W. Price.

**Diagnosis.** Article 3 of antennular peduncle with distomedial flagellated seta; thoracic endopod 3 with 6–7 robust flagellated setae on medial margin of carpo-propodus; male pleopod 3 with 3–5 bent, attenuated spines on distal margin; male pleopod 4 with 4–6 bent, attenuated spines on distal margin; uropodal endopod armed with 3–4 spiniform setae along medial margin; lateral margins of telson completely armed with 14–19 spiniform setae per margin (including apical setae); outer apical seta 1.6–2.0 times longer than inner; cleft depth 0.25 times length of telson, anterior 0.75 length of cleft armed with 10–16 spinules.

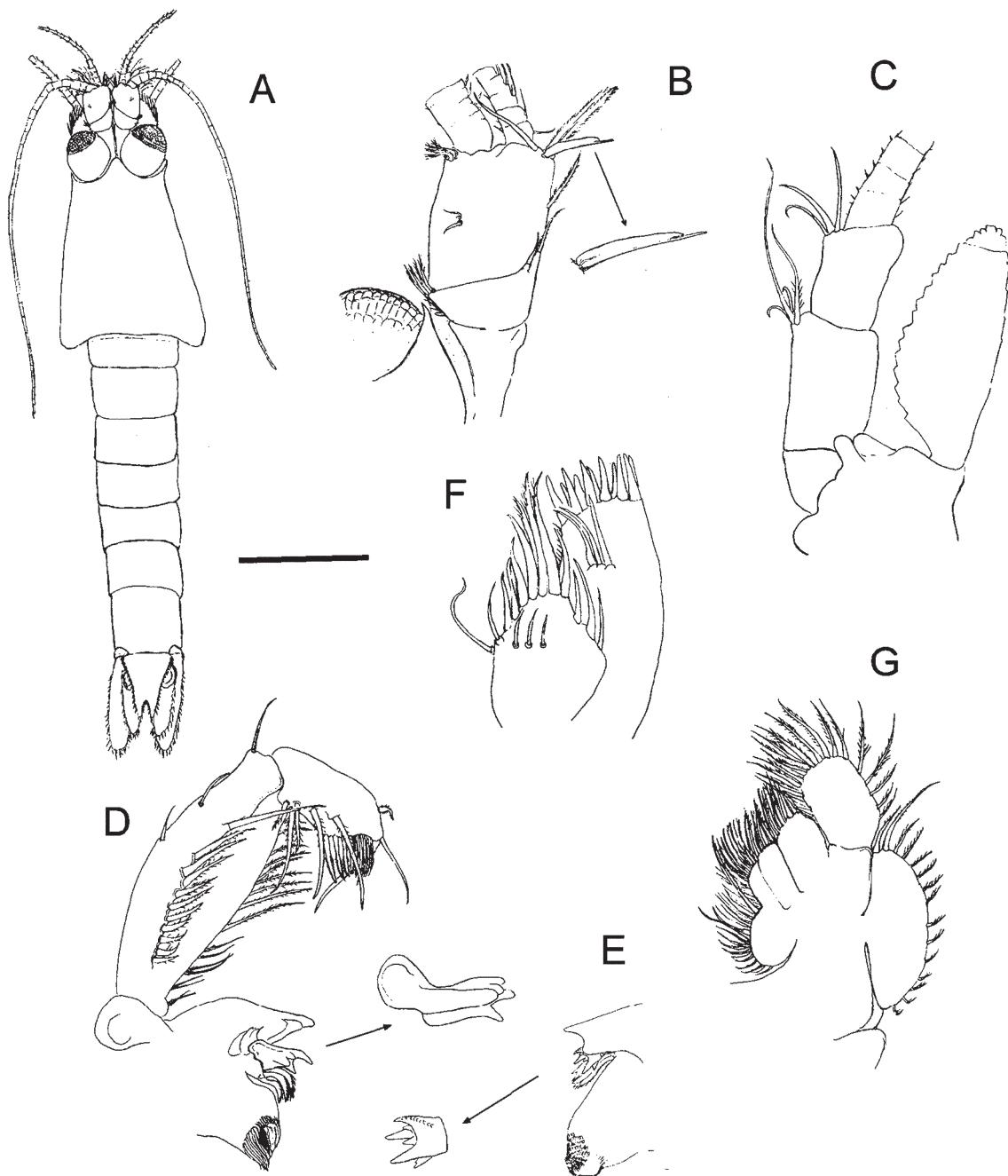
**Description.** General body form (Fig. 1A): small, moderately robust; carapace with anterior margin produced into a pointed triangular rostrum; posterior dorsal margin emarginated, exposing thoracic somite 8; anterolateral lobes rounded.

Antennule peduncle (Fig. 1B): article 1 subequal in length with article 3, distolateral epiprocess with 3–4 simple setae and 1 blunt spiniform seta laterally and 4 plumose setae distally; article 2 compressed with 1 plumose and

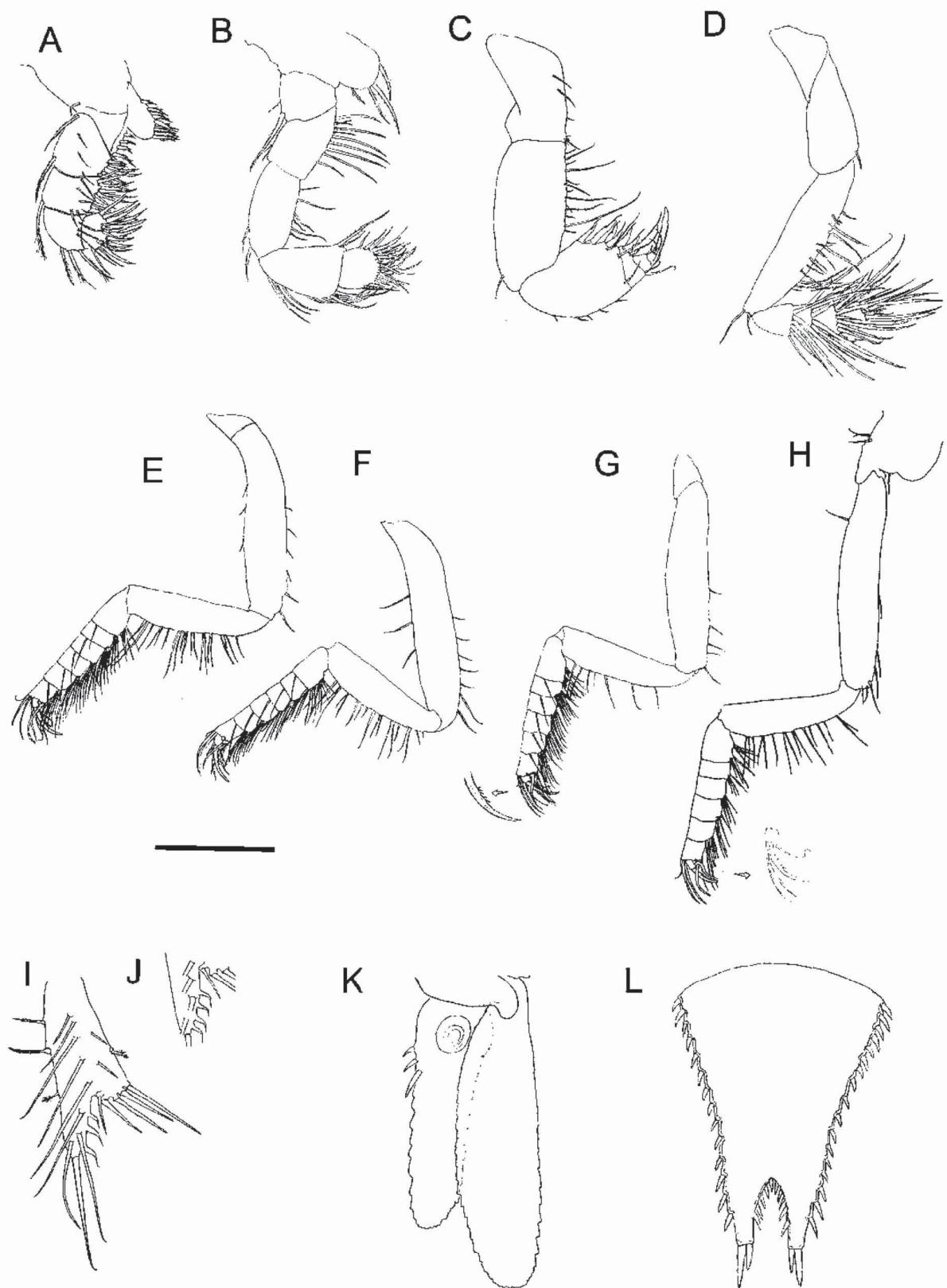
1 simple seta distomedially; article 3 with 1 thick subapically flagellated seta, 0.6–0.7 times width of distal margin of article 3, also bears 2 long plumose setae and 1 long simple seta on distomedial margin, 3–4 plumose setae on distolateral margin, 2 simple setae on dorsolateral surface, and 1 plumose seta on medial margin; males with setose lobe on ventral surface.

Antenna (Fig. 1C): scale extending slightly beyond peduncle, 2.7–2.9 times as long as maximum width, medial margin moderately convex, lateral margin straight, apex articulated, tip about 0.1 times scale length, all margins setose; antennal peduncle 3-articulated; article 1 inconspicuous; article 2 is 1.2–1.3 times longer than article 3, bears 3 simple and 1 plumose setae distomedially; article 3 with 3 simple setae distomedially.

Eye (Fig. 1A): large, oval, directed laterally, distal end of eyestalk slightly wider than cornea with ocular tooth on anteromedial margin; cornea large, oval, occupying distal third of eye.



**FIGURE 1.** *Heteromysis (Olivemysis) modlini*, new species. Adult male. A, dorsal view; B, antennular peduncle and enlargement of flagellated seta; C, antennal peduncle and scale; D, left mandible with palp and enlargement of lacinia mobilis; E, right mandible and enlargement of lacinia mobilis; F, maxillule; G, maxilla. Scale, A = 1.0 mm; B = 0.25 mm; C, G = 0.20 mm; D, E = 0.15 mm; F = 0.10 mm.



**FIGURE 2.** *Heteromysis (Olivemysis) modlini*, new species. Adult male. A–F, endopods of thoracic limbs 1–6; G, H, endopods of thoracic limbs 7, 8 and enlargements of dactyli; I, male pleopod 3; J, male pleopod 4, distal end; K, uropod; L, telson. Scale, A–H, K, L = 0.25 mm; I, J = 0.15 mm.

TABLE 1. Common and specific morphological characters of species closely related to *Heteromysis (Olivemysis) modlini*, new species. Subgeneric placement follows new diagnostic in this study.

Character	<i>H.(O.) agelas</i>	<i>H. bredini</i>	<i>H. (O.) guttari</i>	<i>H. (O.) tuberculospina</i>	<i>H. (O.) modlini</i>
Length ratio of flagellated seta: distal margin width of article 3 of antennular peduncle	0.57	0.42	0.44	0.67, seta, tuberculate	0.60–0.70
Antennal scale reaching beyond antennal peduncle	yes	yes	no	yes	yes
Length/width ratio of antennal scale	2.8	2.5	2.8	3.1	2.7–2.9
Flagellated setae on medial margin of carpo-propodus of thoracic endopod 3	5	10	5–10	7	6–7
Modified male pleopods (3 <sup>rd</sup> pair)	4 flagellated setae	male not described	2–10 flagellated seta	10 flagellated setae	3–5 attenuated spines
Modified male pleopods (4 <sup>th</sup> pair)	5 flagellated setae	male not described	8–17 flagellated setae	10 flagellated setae	4–6 attenuated spines
Spiniform setae on uropodal endopod	2	5	4–6	5	3–4
Lateral spiniform setae on telson (apical setae included)	entire, 15–16	entire, 19–20	nearly entire, 9–14	nearly entire, 17–18	entire, 14–19
Telson cleft shape; cleft depth: telson length	V-shaped, 0.20	V-shaped, 0.33	V-shaped, 0.30	V-shaped, 0.30	V-shaped, 0.25
Spinules in telson cleft	entire, 12	entire, 31	nearly entire, 13–27	entire, 18–20	anterior 3/4, 10–16
Outer:inner length ratio of apical telson setae	2.5–3.0	1.7	2.2–2.5	1.4–1.5	1.6–2.0
References	Modlin 1987b	Brattegård 1970	Băcescu 1968, Brattegård 1970, Băcescu & Iliffe 1986, Price & Heard 2004	Modlin 1987a	Present study

Mandible (Figs. 1D, E): cutting edges typical of genus; palp 3-articulated; article 1 small, inconspicuous; article 2 about two times longer than article 3, lateral margin with a series of plumose setae along entire length, medial margin with curved row of 9–12 plumose setae; article 3 with 2 setulose setae at apex and 9–12 pennate setae on distal part, 5 setulose setae on medial surface.

Labrum and paragnaths: typical of genus.

Maxillule (Fig. 1F): typical of genus; outer lobe of protopodite with 11–14 apical robust spiniform and 3 subapical simple setae.

Maxilla (Fig. 1G): typical of genus; exopod with 15–17 plumose setae.

Thoracic endopods 1 and 2 as illustrated (Figs. 2A, B). Thoracic endopod 3 (Fig. 2C): ischium about 0.7 times length of merus; merus 1.25 times length of carpo-propodus, medial margin with a series of 12–14 short and long simple setae, lateral margin with 1 simple seta distally; medial margin of carpo-propodus with 6–7 robust flagellated setae, usually 4 arranged in pairs distally, 2–3 single setae proximally, lateral margin with 4–5 setae; dactylus with long, slightly curved, robust nail on distal end. Thoracic endopod 4 (Fig. 2D): merus about 1.5 times length of ischium; carpo-propodus about 0.6 times length of merus, with 4 articles, distal 3 subequal in length, each about 0.5–0.7 times as long as proximal article. Thoracic endopods 5–8 (Figs. 2E–H): merus about 0.7 times length of ischium; carpo-propodus subequal in length to merus, with 6 articles, distal 5 subequal in length, each about 0.5 times as long as proximal article; dactylus armed with slender serrated nail.

Thoracic exopods: exopod 1 with 8 articles; exopods 2–8 with 9 articles.

Thoracic sternal processes: median spiniform processes on sterna 3–8 in males and sternite 1 in females.

Pleopods: uniarticulated; male pleopods 1, 2, and 5 unmodified; pleopod 3 (Fig. 2I) with row of 8 plumose setae on anterior surface, distal margin with 3–5 bent, attenuated spines and 1 long seta, lateral margin with 3 plumose setae, medial margin with 1 plumose seta, pseudobranchial lobe with 5 plumose setae; pleopod 4 (Fig. 2J) with row of 7 plumose setae on anterior surface, distal margin with 4–6 bent, attenuated spines and 1 long seta, lateral margin with 3 plumose setae, medial margin with 1 plumose seta, pseudobranchial lobe with 5 plumose setae; female pleopods as unmodified male pleopods.

Uropod (Fig. 2K): exopod about 1.3 times longer than endopod, lateral margin straight, medial margin slightly convex, all margins setose; endopod linguiform with a row of 3–4 prominent spiniform setae on medial margin in region of statocyst, all margins setose.

Telson (Fig. 2L): 0.7–0.8 times length of uropodal exopod, 1.2–1.4 times as long as maximum width; lateral margins moderately concave, armed along entire length with 14–19 spiniform setae per margin (apical setae included); outer apical seta 1.6–2.0 times longer than inner; cleft V-shaped, depth 0.25 times length of telson, anterior 0.75 length of cleft armed with 10–16 spinules.

**Etymology.** This species is named in honor of Richard Modlin in recognition of his contributions to the study of the genus *Heteromysis* of the northwest Atlantic.

**Habitat.** *Heteromysis (Olivemysis) modlini* collected from rock/sponge/algal washings in back reef and sand/seagrass habitats in depths of 1–2 m. Collecting techniques were too general to determine if the species was associated with a specific sessile host.

**Distribution.** This species is known only from waters immediately adjacent to the south coast of Grand Cayman Island.

**Remarks.** Of the 27 nominal species of *Heteromysis* reported from the western Atlantic, *H. (Olivemysis) modlini* is most closely related to *H. agelas* Modlin, 1987, *H. bredini* Brattegård, 1970, *H. (Olivemysis) guitarti* Băcescu, 1968, and *H. tuberculospina* Modlin, 1987. These species share the following characters: article 3 of antennular peduncle with normally flagellated spiniform seta for both sexes; margins of telsonic cleft with spinules along at least 0.75 length; lateral margins of telson armed with spiniform setae along at least 0.8 length; uropodal endopod with 6 or fewer spiniform setae along medial margin; male pleopods 3 and 4 with modified setae or spines (see Table 1). *Heteromysis (Olivemysis) modlini* is unique among these species in having bent, attenuated spines (non-articulated cuticular extensions) on male pleopods 3 and 4 while three of the other four species are known to possess flagellated setae (articulated cuticular extensions) or spines. Males of *H. bredini* have not been described. The new species differs from *H. agelas* and *H. (Olivemysis) guitarti* in having the outer apical seta on the telsonic lobes two times or less the length of the inner seta rather than 2.2 times or more. It is distinguished further from *H. agelas* by the setation of the uropodal endopod (3–4 setae compared to 2) and from *H. (Olivemysis) guitarti* by having the antennal scale reaching beyond the antennal peduncle as well as more lateral setae on the telson (14–19

compared to 9–14). *Heteromysis (Olivemysis) modlini* is distinguished from *H. bredini* by having 10–16 rather than 31 spinules in the telsonic cleft and 6–7 rather than 10 flagellated setae on the carpo-propodus of thoracic endopod 3. *Heteromysis tuberculospina* differs from the new species in having tubercles on the flagellated seta of article 3 of the antennular peduncle, an antennal scale length:width ratio greater than 3.0 rather than less than 3.0, and 18–20 rather than 10–16 spinules in the telsonic cleft.

***Heteromysis (Olivemysis) mclellandi*, new species**

Figs. 3–5

*Heteromysis* sp. A.—Price & Heard, 2004:157, fig. 4I.

**Type material.** Holotype: —adult male (Length [L] 4.8 mm), USNM 1142940, Turks and Caicos Islands, BWI, fringing reef off Pine Cay, hard sponge, depth 24–27 m, J. McLelland, coll., 17 Nov 1989. Paratypes: —1 adult male (L 5.3 mm), USNM 1142941, same collection data as holotype; —1 ovigerous female (L 5.1 mm), GCRL 3000, Turks and Caicos Islands, fringing reef off Pine Cay, sponge, depth 24–27 m, J. McLelland, coll., 17 Nov 1989.

**Additional material examined.** —1 male, 1 female (damaged), same collection data as holotype; —1 male, 1 female (damaged), Turks and Caicos Islands, BWI, fringing reef off Pine Cay, sponge, depth 24–27 m, J. McLelland, coll., 17 Nov 1989; —2 males (damaged), Turks and Caicos Islands, fringing reef off Pine Cay, large yellow tube sponge, depth 21 m, J. McLelland, coll., 13 Nov 1989. Material in collection of W. W. Price.

**Diagnosis.** Article 3 of antennular peduncle with distomedial flagellated seta possessing small tubercles distally; thoracic endopod 3 with 7–9 robust flagellated setae with tubercles on medial margin of carpo-propodus; pleopods 1–5 of males and females uniarticulated, with 14–29 modified attenuated setae on anterior surface, lateral, distomedial, and distal margins; uropodal endopod armed with 4–5 spiniform setae along medial margin; lateral margins of telson armed along posterior 0.75 length with 13–16 spiniform setae per margin (including apical setae); outer apical seta 1.2–1.6 times longer than inner; cleft depth 0.15–0.20 times length of telson, cleft completely armed with 12–15 spinules.

**Description.** General body form (Fig. 3A): moderately slender; carapace with anterior margin produced into a triangular rostrum; posterior dorsal margin emarginated, partially exposing thoracic somite 8; anterolateral lobes rounded.

Antennule peduncle (Fig. 3B): article 1 subequal in length with article 3, distolateral epiprocess with 3–4 simple setae; article 2 compressed with 1 plumose and 1 attenuated simple seta distomedially, small finger-like process immediately adjacent to a cluster of 4–5 simple setae on proximodorsal surface; article 3 with 1 thick, slightly curved subapically flagellated seta with small tubercles distally, 2 plumose setae, and 1 long simple seta on distomedial margin, 4 setae on small lobe on distodorsal margin, 1 plumose seta on medial margin; outer and inner flagella with attenuated finely setulose setae along medial margins, density greatest proximally; males with moderately setose lobe on ventral surface.

Antenna (Fig. 3C): scale not extending beyond peduncle, 2.6–2.7 times as long as maximum width, medial margin slightly convex, lateral margin straight, apex faintly articulated, tip 0.07 times scale length, all margins setose; antennal peduncle 3-articulated; article 1 inconspicuous; article 2 is 1.1 times longer than article 3, armed with 3 simple and 1 plumose setae distomedially; article 3 with 3 short simple setae and 1 long attenuated seta distomedially, 2 plumose setae distolaterally, flagellum with attenuated setae along medial margin, density greatest proximally.

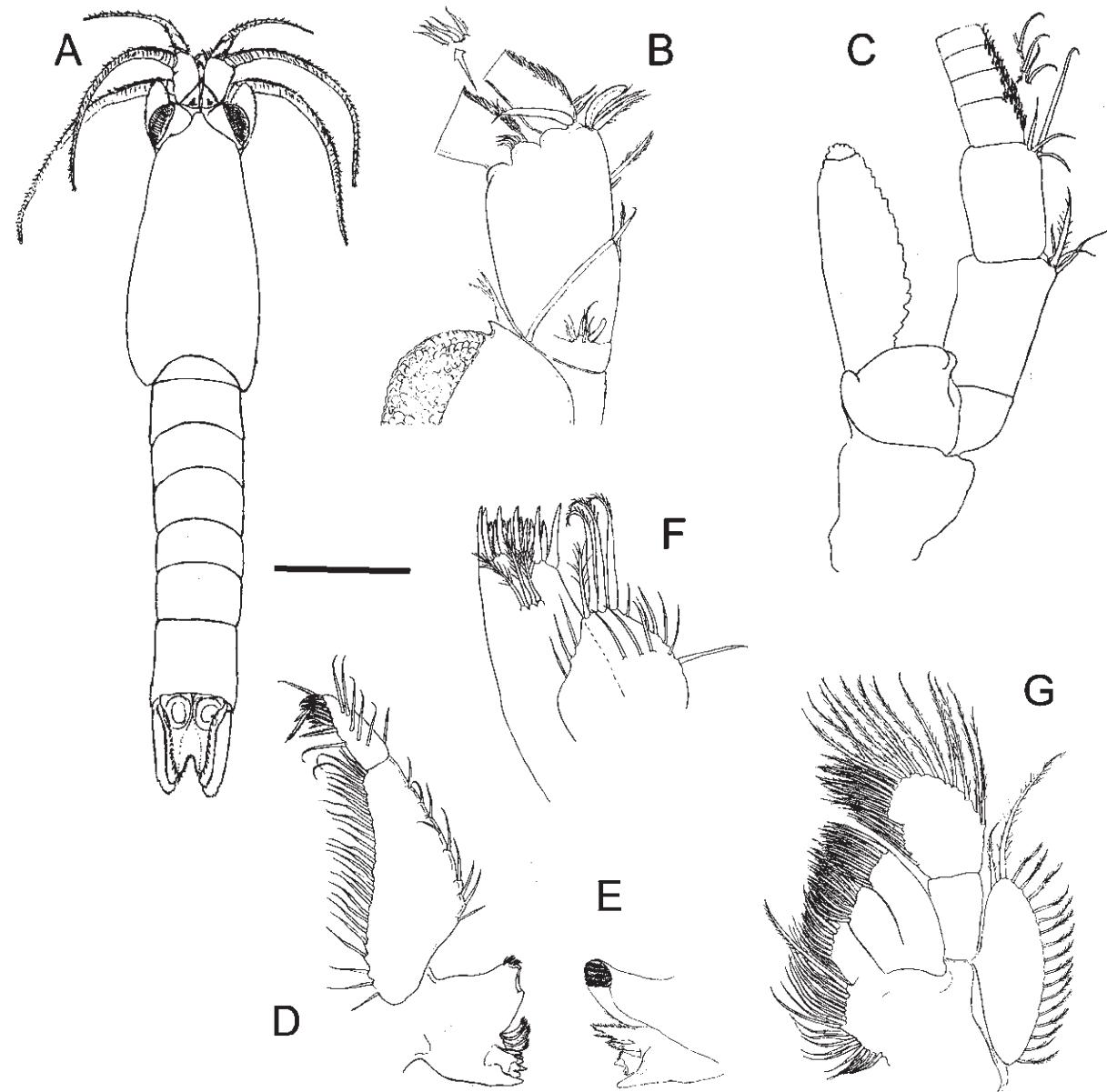
Eye (Fig. 3A): moderately large, oval, distal end of eyestalk slightly wider than cornea with ocular tooth on anteromedial margin; cornea large, oval, occupying distal third of eye.

Mandible (Fig. 3D, E): cutting edges typical of genus; palp 3-articulated; article 1 small, inconspicuous; article 2 expanded medially, about 2.5 times longer than article 3, lateral margin with a series of 19–26 simple and attenuated setae along entire length, medial margin with 9–12 simple setae; article 3 with 2 long plumose setae at apex and 12–13 shorter pennate setae on distal part, 5–6 simple setae on medial surface.

Labrum and paragnaths: typical of genus.

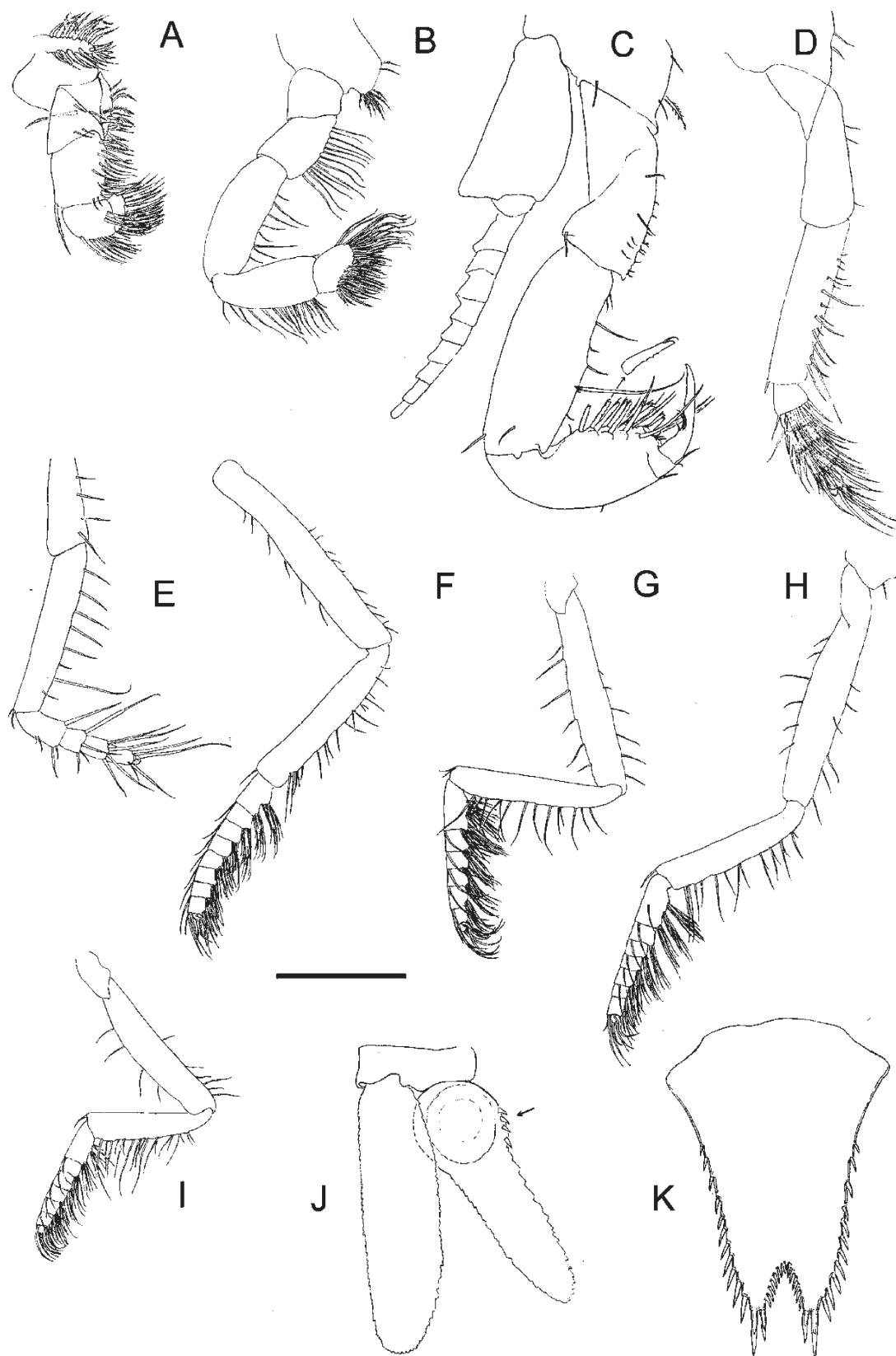
Maxillule (Fig. 3F): outer lobe apex of protopodite with 12–14 robust setulose spiniform and 3 subapical plumose setae; inner lobe apex with 3 long distally curved serrated setae, 3 subapical simple setae, 5–6 attenuated setae on inner margin, and 3 attenuated and 1 plumose setae on outer margin.

Maxilla (Fig. 3G): typical of genus; exopod with 15–18 plumose setae.

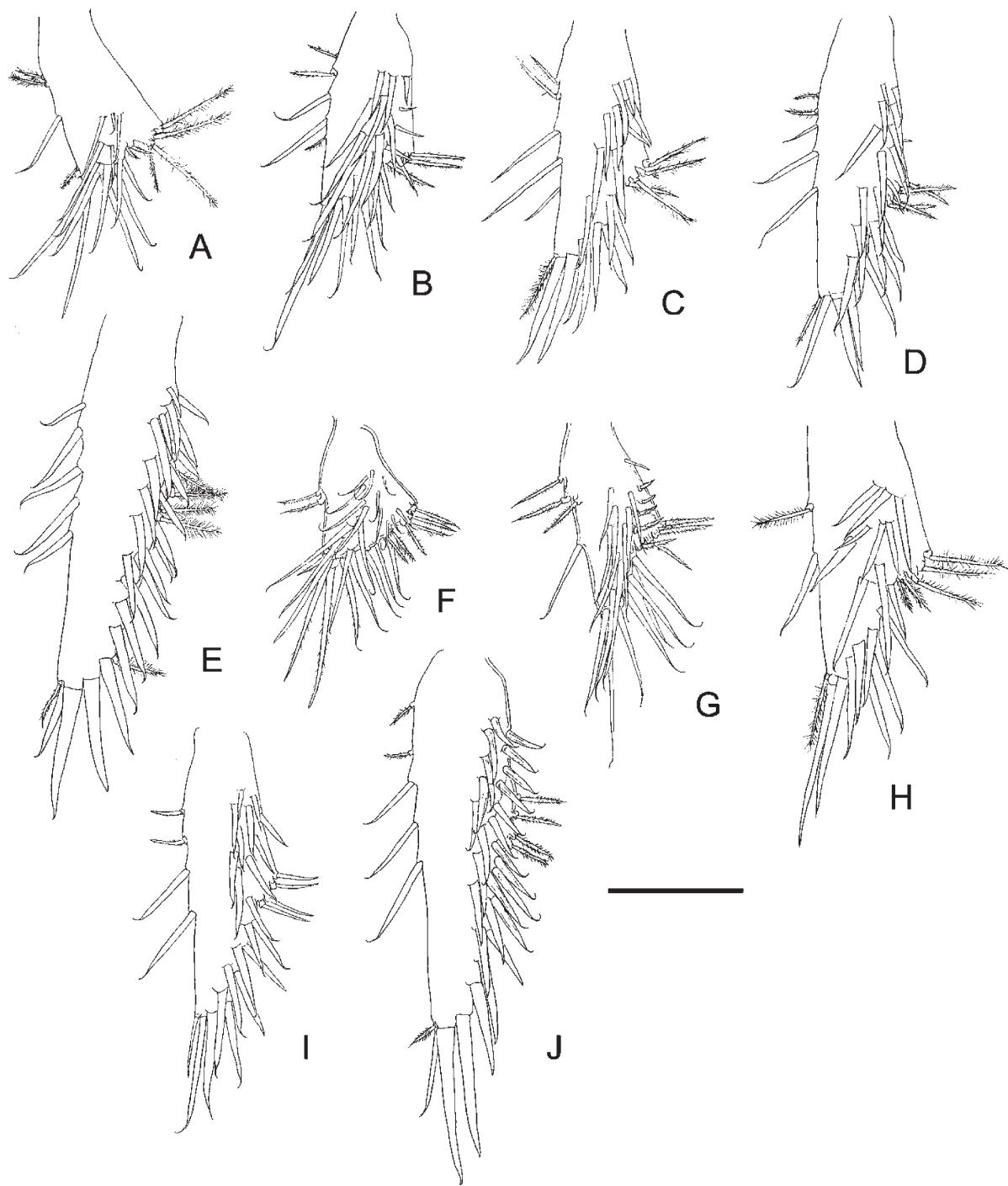


**FIGURE 3.** *Heteromysis (Olivemysis) mclellandi*, new species. Adult male. A, dorsal view; B, antennular peduncle and enlargement of attenuated setae on outer flagellum; Adult female: C, antennal peduncle and scale and enlargement of attenuated setae on flagellum; D, left mandible with palp; E, right mandible; F, maxillule; G, maxilla. Scale, A = 1.0 mm; B–E, G = 0.25 mm; F = 0.10 mm.

Thoracic endopods 1 and 2 as illustrated (Fig. 4A, B). Thoracic endopod 3 (Fig. 4C): ischium about 0.6 times length of merus; merus 1.1–1.2 times length of carpo-propodus, medial margin with a series of 9–15 short and long simple setae, lateral margin with 1 simple seta distally; medial margin of carpo-propodus with 7–9 robust flagellated setae with small tubercles or microdentations, 6–8 of these setae arranged in pairs distally, 1 single seta proximally, 1 or more simple setae at base of each single or pair of flagellated setae, lateral margin with 4–8 short simple setae; dactylus with long, slightly curved, robust nail on distal end. Thoracic endopod 4 (Fig. 4D, E): merus 1.1 times length of ischium; carpo-propodus 0.6–0.7 times length of merus, with 4 articles, distal 3 subequal in length, each 0.4–0.5 times as long as proximal article; Thoracic endopod 5 (Fig. 4F): merus about 0.8 times length



**FIGURE 4.** *Heteromysis (Olivemysis) mclellandi*, new species. Adult female. A–C, endopods of thoracic limbs 1–3; D, E, endopod of thoracic limb 4, medial and lateral aspects, respectively; F–I, endopods of thoracic limbs 5–8; J, uropod; K, telson. Scale = 0.3 mm.



**FIGURE 5.** *Heteromysis (Olivemysis) mclellandi*, new species. Adult male. A–E, pleopods 1–5; Adult female. F–J, pleopods 1–5. Scale = 0.2 mm.

of ischium; carpo-propodus 0.8 times length of merus, with 7–8 articles, distal 6–7 subequal in length, each 0.4–0.5 times as long as proximal article; dactylus armed with slender serrated nail. Thoracic endopods 6 and 8 (Fig. 4G, I): merus approximately 0.7 times length of ischium; carpo-propodus subequal in length to merus, with 6 articles, distal 5 are subequal in length, each 0.3–0.4 times as long as proximal article; dactylus armed with slender serrated nail. Thoracic endopod 7 (Fig. 4H): merus approximately 0.7 times length of ischium; carpo-propodus subequal in length to merus, with 7 articles, distal 6 subequal in length, each 0.3–0.4 times as long as proximal article; dactylus armed with slender serrated nail.

Thoracic exopods: exopods 1–8 with 9 articles; basal plates of exopods 4–8 with small rounded tooth on outer distal corner.

Thoracic sternal processes: sterna 3–8 supporting median spiniform processes in males.

Pleopods (Fig. 5): uniarticulated; male and female pleopods 1–5 with 14–29 modified attenuated setae on anterior surface, lateral, distomedial, and distal margins, the attenuated setae on distal margins reaching to anterior margins of adjacent posterior somites, 1 setulose seta on distolateral margin, pseudobranchial lobe with 4 sometimes minutely setulose setae; pleopod 1 short and subtriangular with most attenuated setae on truncate distal margin, succeeding pleopods becoming more elongate posteriorly with most attenuated setae on anterior surface, distomedial, and distal margins.

Uropods (Fig. 4J): exopod about 1.2 times longer than endopod, lateral margin straight, inner (medial) margin slightly convex, all margins setose; endopod linguiform with a row of 4–5 spiniform setae on medial margin in region of statocyst, all margins setose.

Telson (Fig. 4K): 0.8 times length of uropodal exopod, 1.3 times as long as maximum width; lateral margins moderately concave, armed along anterior 0.75 length with 13–16 spiniform setae per margin (apical setae included); outer apical seta 1.2–1.6 times longer than inner; cleft depth 0.15–0.20 times length of telson, completely armed with 12–15 spinules.

**TABLE 2.** Common and specific morphological characters of species closely related to *Heteromysis (Olivemysis) mclellandi* new species. Subgeneric placement follows new diagnostic in this study.

Character	Species			
	<i>H.(O.) gomezi</i>	<i>H.(O.) mayana</i>	<i>H. (O.) rubrocincta</i>	<i>H.(O.) mclellandi</i>
Flagellated seta on antennular peduncle	present	present	present, fine serrations distally	present, tuberculate
Antennal scale reaching beyond antennal peduncle	no	yes	no	no
Flagellated spiniform setae on medial margin of carpo-propodus of thoracic endopod 3	3	5–7, non-tuberculate or tuberculate	0	7–9, tuberculate
Modified female pleopods	none	none	none	all 5 pairs, attenuated setae
Modified male pleopods	1 <sup>st</sup> , 2 <sup>nd</sup> pair-terminal spiniform seta; 3 <sup>rd</sup> , 4 <sup>th</sup> pair-15, 17–18 flagellated setae, respectively	1 <sup>st</sup> , 2 <sup>nd</sup> pair-terminal spiniform seta; 3 <sup>rd</sup> , 4 <sup>th</sup> pair-13–22, 19–35 flagellated setae, respectively	3 <sup>rd</sup> , 4 <sup>th</sup> pair-6–10, 8–15 flagellated setae, respectively	all 5 pairs, attenuated setae
Spiniform setae on uropodal endopod	3	1–4	4–5	4–5
Lateral spiniform setae on telson (apical setae included)	posterior 2/3, 9	posterior 1/2–2/3, 6–9	posterior 1/2, 12–13	posterior 2/3, 13–16
Telson cleft depth:telson length	0.33	0.25–0.33	0.20	0.15–0.20
Spinules in telson cleft	entire, 20–22	entire, 14–20	entire, 15–16	entire, 12–15
Outer:inner length of apical telson setae	2.0	1.8–3.0	2.0	1.2–1.6
References	Băcescu 1970	Brattegård 1970, Price <i>et al.</i> 2002, Price & Heard 2004	Băcescu 1968	present study

**Etymology.** This species is named in honor of the collector, Jerry McLelland, in recognition of his many contributions to the study of the invertebrate fauna of the temperate and tropical waters of the northwest Atlantic.

**Habitat.** *Heteromysis (Olivemysis) mclellandi* was collected from unidentified sponges in depths of 21–27 m on deep fringing reefs. This species may be spongiicolous, similar to *H. (Olivemysis) guitarti* Băcescu, 1968, which

is another tropical northwest Atlantic species that appears to have a commensal relationship with sponges, especially with the Demospongidae genus *Ircinia* (Price and Heard 2004).

**Distribution.** This species is known only from waters adjacent to Pine Cay, Turks and Caicos Islands.

**Remarks.** *Heteromysis (Olivemysis) mclellandi* may be separated immediately from all other nominal species of *Heteromysis* and, in fact, all other members of the subfamily *Heteromysinae* by having modified attenuated setae on pleopods 1–5 of both males and females. In an earlier study, Price and Heard (2004) characterized these modified setae of *Heteromysis (Olivemysis) mclellandi* (=*Heteromysis* sp A) as simple, leading to the report of “male pleopods 3 and 4 without modified spiniform setae”. Closer examination showed that attenuated setae were present on male and female pleopods as well as on all mouthparts of this new species.

A survey of species within the subfamily *Heteromysinae* reveals only three in which females possess pleopods with modified setae. Modified setae are reported for pleopods 2–5 for both sexes of *Heteromysoides longiseta* Băcescu, 1983, pleopods 2–4 for both sexes of *Heteromysis (Neoheteromysis) muelleri* Băcescu, 1976, and pleopod 2 for females of *Heteromysis kushimotensis* Murano and Fukuoka, 2003.

For heteromysid males, in addition to the two species mentioned above, modified setae are present on pleopod 3 of *Harmelinella mariannae* Ledoyer, 1989 and on pleopod 4 of all members of *Heteromysis* belonging to the subgenus *Olivemysis* Băcescu, 1968. Within this subgenus the majority of species also have modified setae on pleopod 3. However, seven species have pleopods 2–4 modified: *H. (Olivemysis) dardani* Wittmann, 2008, *H. (Olivemysis) macrourhalma* Băcescu, 1983, *H. (Olivemysis) quadrispinosa* Murano, 1988, *H. tattersalli* Nouvel, 1942, *H. (Olivemysis) tenuispina* Murano, 1988, *H. (Olivemysis) wirtzi* Wittmann, 2008, and *H. (Olivemysis) zeylanica* Tattersall, 1922. Three additional species, *H. digitata* Tattersall, 1927, *H. gomezi* (*Olivemysis*) Băcescu, 1970, and *H. (Olivemysis) mayana* Brattgard, 1970 exhibit modified setae on pleopods 1–4. Although Bamber (2000) places *H. (Olivemysis) meenakshiae* Bamber, 2000 in the subgenus *Olivemysis*, and describes and illustrates male pleopods 2 and 3 as modified, no mention is made of pleopod 4. The subgeneric status of some species (i.e., *H. tattersalli*, *H. digitata*) included in this section could not be determined. This is because their descriptions do not include or indicate the characters needed for proper subgeneric placement (see below).

Among the previously described western Atlantic species of *Heteromysis*, *H. (Olivemysis) mclellandi* most closely resembles *H. (Olivemysis) gomezi*, *H. (Olivemysis) mayana*, and *H. (Olivemysis) rubrocincta* Băcescu, 1968 (see Table 2). Although the telsons of these four species are similar with respect to the arrangement of setae on the lateral margin and spinules in the telsonic cleft, the new species differs from its three related congeners in several aspects. Unlike *H. (Olivemysis) mclellandi*, females of these three species have no modified setae on their pleopods. Males have flagellated setae on pleopods 3 and 4; in addition, *H. (Olivemysis) gomezi* and *H. (Olivemysis) mayana* males have a terminal spiniform seta on pleopods 1 and 2. *Heteromysis (Olivemysis) mclellandi* is the only species with tubercles on the flagellated seta on the antennular peduncle as well as attenuated setae on the mouthparts. The new species has 7–9 flagellated setae on the carpo-propodus of thoracic endopod 3 rather than 0–7 in the other species; a telson cleft depth: telson length ratio of about 1/6 rather than 1/5 or greater; and an outer: inner length ratio of apical telson setae of 1.2–1.6 rather than 1.8 or more.

### Taxonomic history and classification of the subgenus *Olivemysis* Băcescu, 1968

In 1968, Băcescu revised the tribe *Heteromysini* Norman, 1892, by erecting a new genus *Heteromysoides* Băcescu, 1968 and suggesting the first established *Heteromysini* genus, *Heteromysis*, to consist of three subgenera: *Heteromysis* S. I. Smith, 1873, *Gnathomysis* Bonnier and Pérèz, 1902, and *Olivemysis* Băcescu, 1968. Later, Băcescu completed his *Heteromysis* classification by adding a fourth subgenus, *Neoheteromysis* Băcescu, 1976.

Despite taxonomic recognition of *Olivemysis*, the history of diagnostic characters defining this subgenus is somewhat confusing. Initially, Băcescu (1968) included, as a diagnostic character, the absence of thoracic sternal processes. Later, without comment, Băcescu (1970) placed two new species with well-developed sternal processes within *Olivemysis*, thus expanding the diagnosis for the subgenus. This issue, as well as another involving the spelling of *Olivemysis*, was addressed by Wittmann (2008). To complicate matters further, Bowman and Orsi (1992) and Bravo and Murano (1996) misinterpreted the wording in Băcescu's 1968 key to the genera and subgenera of the Tribe *Heteromysini* and, in their keys, referred to sternal processes as abdominal rather than thoracic.

Lending to the confusion, with the exception of Băcescu's (1968: 237) initial designation of the subgenus in a dichotomous key, no diagnostics for *Olivemysis* have ever been provided in the subsequent publications dealing

with the group (e.g., Băcescu 1976, Bowman & Orsi 1992, Bravo & Murano 1996). In effect, a formal diagnosis for *Olivemysis* is wanting. To address this problem, we provide the following formal diagnosis for the subgenus.

### Genus *Heteromysis* S. I. Smith, 1873

#### Subgenus *Olivemysis* Băcescu, 1968

**Type species.** *Heteromysis rubrocincta* Băcescu, 1968; “Grigore Antipa”, National Museum of Natural History, Bucharest, Romania; no. 49073.

**Additonal species:** *H. abrucei* Băcescu, 1979; *H. actiniae* Clarke, 1955; n. comb.; *H. agelas* Modlin, 1987, n. comb.; *H. beetoni* Modlin, 1984, n. comb.; *H. bermudensis* G. O. Sars, 1885; *H. coralina* Modlin, 1987, n. comb.; *H. dardani* Wittmann, 2008; *H. ebanksae* Price & Heard, 2008; *H. essingtonensis* Murano, 1988; *H. floridensis* Brattegard, 1969, n. comb.; *H. gomezi* Băcescu, 1970; *H. gutiarti* Băcescu, 1968; *H. kensleyi* Modlin, 1987, n. comb.; *H. kushimotensis* Murano & Fukuoka, 2003, n. comb.; *H. macrophthalma* Băcescu, 1983; *H. mariani* Băcescu, 1970; *H. maxima* Murano, 1998; *H. mayana* Brattegard, 1970; *H. mclellandi*, n. sp.; *H. meenakshiae* Bamber, 2000; *H. modlini*, n. sp.; *H. quadrispinosa* Murano, 1988; *H. sexspinosa* Murano, 1988; *H. siciliseta* Brattegard, 1970, n. comb.; *H. tenuispina* Murano, 1988; *H. tuberculospina* Modlin, 1987, n. comb.; *H. wirtzi* Wittmann, 2008; *H. xanthops* Li, 1964, n. comb.; *H. zeylandica* W. M. Tattersall, 1922.

**New diagnosis.** Antenna 1, article 3 distomedial margin with medial subapically flagellated seta directed anteriorly and lateral, long, simple seta directed laterally. Thoracic endopod 3 moderately robust, some of the distal articles enlarged. Pleopod 4 of male modified. Uropodal endopod shorter than exopod.

**Remarks.** Prior to this report, 18 of the 80 nominal species of *Heteromysis* were assigned to *Olivemysis*. Based on review of the species lacking subgeneric designations that are presently included in the genus, we here formally add 10 species to the subgenus *Olivemysis*: *H. actiniae* Clarke, 1955; n. comb.; *H. agelas* Modlin, 1987, n. comb.; *H. beetoni* Modlin, 1984, n. comb.; *H. coralina* Modlin, 1987, n. comb.; *H. floridensis* Brattegard, 1969, n. comb.; *H. kensleyi* Modlin, 1987, n. comb.; *H. kushimotensis* Murano & Fukuoka, 2003, n. comb.; *H. siciliseta* Brattegard, 1970, n. comb.; *H. tuberculospina* Modlin, 1987, n. comb.; *H. xanthops* Li, 1964, n. comb.,

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